the condition of education 2001

INDICATOR 43

Teacher Preparation in 8th-Grade Mathematics and Science

The indicator and corresponding tables are taken directly from *The Condition of Education 2001.* Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 2001*, visit the NCES web site (http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001072) or contact ED PUBs at 1-877-4ED-PUBS.

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NATIONAL CENTER FOR EDUCATION STATISTICS

U.S. Department of Education
Office of Educational Research and Improvement

Teachers

Teacher Preparation in 8th-Grade Mathematics and Science

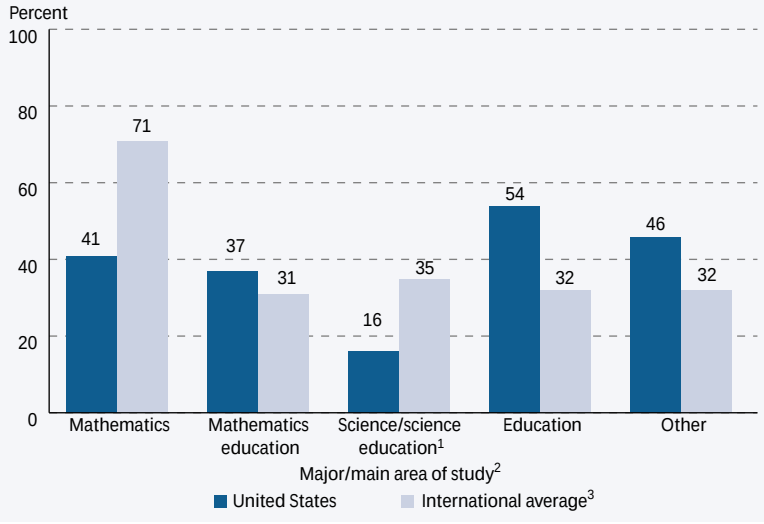
U.S. 8th-graders were less likely than their international peers to be taught mathematics by a teacher who majored in mathematics.

In recent years, researchers, practitioners, and policymakers have focused on the academic preparation and qualifications of teachers, and many have argued that teachers should have subject matter expertise, as well as training in teaching methods. Several studies have indicated that teacher subject matter preparation, particularly in mathematics and science, is related to student achievement, even after controlling for teacher and student background characteristics, such as race/ethnicity and socioeconomic status (Darling-Hammond 2000; Goldhaber and Brewer 1997 in NCES 97–535). In the Third International Mathematics and Science Study–Repeat (TIMSS-R), mathematics and science teachers of 8th-graders were asked about their main areas of study (i.e., their majors or the international equivalent) at the bachelor's and master's degree level.

U.S. 8th-graders were less likely than their international peers to be taught by a mathematics teacher with a bachelor's or master's degree in mathematics. In 1999, 41 percent of U.S. 8th-graders had a mathematics teacher who majored in mathematics, a smaller percentage than the international average of 71 percent. (The international average was based on all 38 participating TIMSS-R countries.) U.S. 8th-graders were about as likely as their international peers to be taught mathematics by a teacher who majored in mathematics education (37 and 31 percent, respectively). Finally, they were more likely than their international peers to be taught mathematics by a teacher who majored in education (54 versus 32 percent).

In 1999, U.S. 8th-graders were as likely as their international peers to be taught science by a teacher with a bachelor's or master's degree major in biology, chemistry, or science education. However, they were less likely than their international peers to be taught science by a teacher who majored in physics and more likely to be taught science by a teacher who majored in education (see supplemental table 43-1). In science, the international average was based on those countries that reported that 8th-grade science was usually taught through a general/integrated science curriculum (23 countries including the United States).

INTERNATIONAL COMPARISON OF MATHEMATICS TEACHERS' MAIN AREAS OF PREPARATION: Percentage of 8th-graders taught mathematics by teachers who reported various main areas of study for their bachelor's and master's degrees: 1999



[1]Includes biology, physics, chemistry, and science education.

[2]More than one category could be selected.

[3]The item response rate for this question was less than 70 percent in some nations. Countries could exclude up to 10 percent of schools or students that would be difficult to test.

NOTE: Eighth grade in most nations. The international average is the average of the national averages of the nations that reported data.

SOURCE: NCES 2001–028, based on data from Mullis et al. (2000). *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, Exhibit R3.1. Chestnut Hill, MA: Boston College.

FOR MORE INFORMATION:

Supplemental Note 5

Supplemental Table 43-1

NCES 2001–028

Goldhaber and Brewer 1997 (NCES 97–535)

Darling-Hammond 2000

Teacher Preparation in 8th-Grade Mathematics and Science

Table 43-1 Percentage of 8th-graders taught science by teachers who reported various main areas of study for their bachelor's and master's degrees: 1999

Major/main area of study[1]	United States	International average[2]
Biology	47	42
Physics	13	23
Chemistry	21	30
Science education	43	44
Mathematics/mathematics education	14	25
Education	56	30
Other	45	29

[1]More than one category could be selected.

[2]The item response rate for this question was less than 70 percent in some nations. Countries could exclude from their sample up to 10 percent of schools or students that would be difficult to test.

NOTE: Eighth grade in most nations. The international average is the average of the national averages of the nations that reported data.

SOURCE: NCES 2001–028, based on data from Martin et al. (2000). *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, Exhibit R3.1. Chestnut Hill, MA: Boston College.

Teacher Preparation in 8th-Grade Mathematics and Science

Table S43 Standard errors for the percentage of 8th-graders taught mathematics by teachers who reported various main areas of study for their bachelor's and master's degrees: 1999

Major/main area of study	United States	International average
Mathematics	3.4	0.6
Mathematics education	3.4	0.6
Science/science education	2.4	0.6
Education	3.4	0.6
Other	3.6	0.6

SOURCE: NCES 2001—028, based on data from Mullis et al. (2000). *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, Exhibit R3.1. Chestnut Hill, MA: Boston College.

Teacher Preparation in 8th-Grade Mathematics and Science

Table S43-1 Standard errors for the percentage of 8th-graders taught science by teachers who reported various main areas of study for their bachelor's and master's degrees: 1999

Major/main area of study	United States	International average
Biology	3.5	0.8
Physics	2.2	0.7
Chemistry	3.0	0.8
Science education	3.7	0.9
Mathematics/mathematics education	2.5	0.7
Education	3.6	0.7
Other	3.7	0.8

SOURCE: NCES 2001—028, based on data from Martin et al. (2000). *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, Exhibit R3.1. Chestnut Hill, MA: Boston College.